

CLAIM AMENDMENTS

Please amend claims 1, 3, 8, 12, 14 and cancel claims 2, 7, 10, 11, 13, 18, 19 as indicated below:

1. (Currently Amended) A vapor sensing system, comprising:

an active sensor that generates an active signal and an error sensor that generates an error signal; and

wherein said active sensor and said error sensor together comprise a vapor sensor, wherein said error signal is subtracted from said active signal to generate a compensated signal indicative of the presence of an ignitable vapor;

an amplifier associated with said vapor sensor, wherein said amplifier subtracts said error signal from said active signal to generate said compensated signal, which is indicative of the presence of said ignitable vapor within a vicinity of an appliance associated with said vapor sensor;

an output signal conditioning circuit which receives said compensated signal from said amplifier and generates a conditioned signal thereof for transmission to a microprocessor;

a microprocessor for instructing said controller to shut down said appliance in response to an input of said conditioned signal to said microprocessor from said amplifier; and

wherein said error sensor is surrounded by a membrane which selectively passes air and humidity, excluding ignitable gasoline vapors, to said error sensor, while protecting said error sensor from airflow, liquids, and dust.

2. (Cancelled)

3. (Currently Amended) The system of claim 1 2 wherein said appliance comprises a fuel-fired appliance.

4. (Original) The vapor sensor of claim 1 wherein said vapor sensor comprises a fluid flow sensor.

5. (Original) The system of claim 1 wherein said vapor sensor comprises a thermal conductivity sensor, which measures an amount of power required to maintain a self-heated resistor thereof at a specific temperatures above an ambient temperature thereof.

6. (Original) The system of 1 wherein said vapor sensor comprises a thermal conductivity sensor, which measures a temperature change at a constant power required of a self-heated resistor thereof.

7. (Cancelled)

8. (Currently Amended) The system of claim 1 2 wherein said active sensor is exposed to a total atmospheric environment, including ignitable vapors generated by said appliance, and wherein said error sensor is exposed to a said total atmospheric environment, excluding said ignitable vapors generated by said appliance.

9. (Original) The system of claim 1 wherein said active sensor is surrounded by a membrane that is permeable to all vapors, except vapors impermeable to airflow, liquids and dust.

10. (Cancelled)

11. (Cancelled)

12. (Currently Amended) A vapor sensing method, comprising the steps of:

providing an active sensor that generates an active signal; and

providing an error sensor that generates an error signal, wherein said active sensor and said error sensor together comprise a vapor sensor, wherein said error signal is subtracted from said active signal to generate a compensated signal indicative of the presence of an ignitable vapor;

associating an amplifier with said vapor sensor, wherein said amplifier subtracts said error signal from said active signal to generate said compensated signal, which is indicative of the presence of said ignitable vapor within a vicinity of an appliance associated with said vapor sensor;

providing an output signal conditioning circuit which receives said compensated signal from said amplifier and generates a conditioned signal thereof for transmission to a microprocessor;

providing a microprocessor for instructing said controller to shut down said appliance in response to an input of said conditioned signal to said microprocessor from said amplifier;

exposing said active sensor to a total atmospheric environment, including ignitable vapors generated by said appliance; and

exposing said error sensor to a said total atmospheric environment, excluding said ignitable vapors generated by said appliance.

13. (Cancelled)

14. (Currently Amended) The method of claim 12 ~~13~~ wherein said appliance comprises a fuel-fired appliance.

15. (Original) The method of claim 12 wherein said vapor sensor comprises a fluid flow sensor.

16. (Original) The method of claim 12 wherein said vapor sensor comprises a thermal conductivity sensor, which measures an amount of power required to maintain a self-heated resistor thereof at a specific temperatures above an ambient temperature thereof.

17. (Original) The method of 12 wherein said vapor sensor comprises a thermal conductivity sensor, which measures a temperature change at a constant power required of a self-heated resistor thereof.

18. (Cancelled)

19. (Cancelled)

20. (Original) The method of claim 12 further comprising the step of surrounding said active sensor by a membrane that is permeable to all vapors, except vapors impermeable to airflow, liquids and dust.